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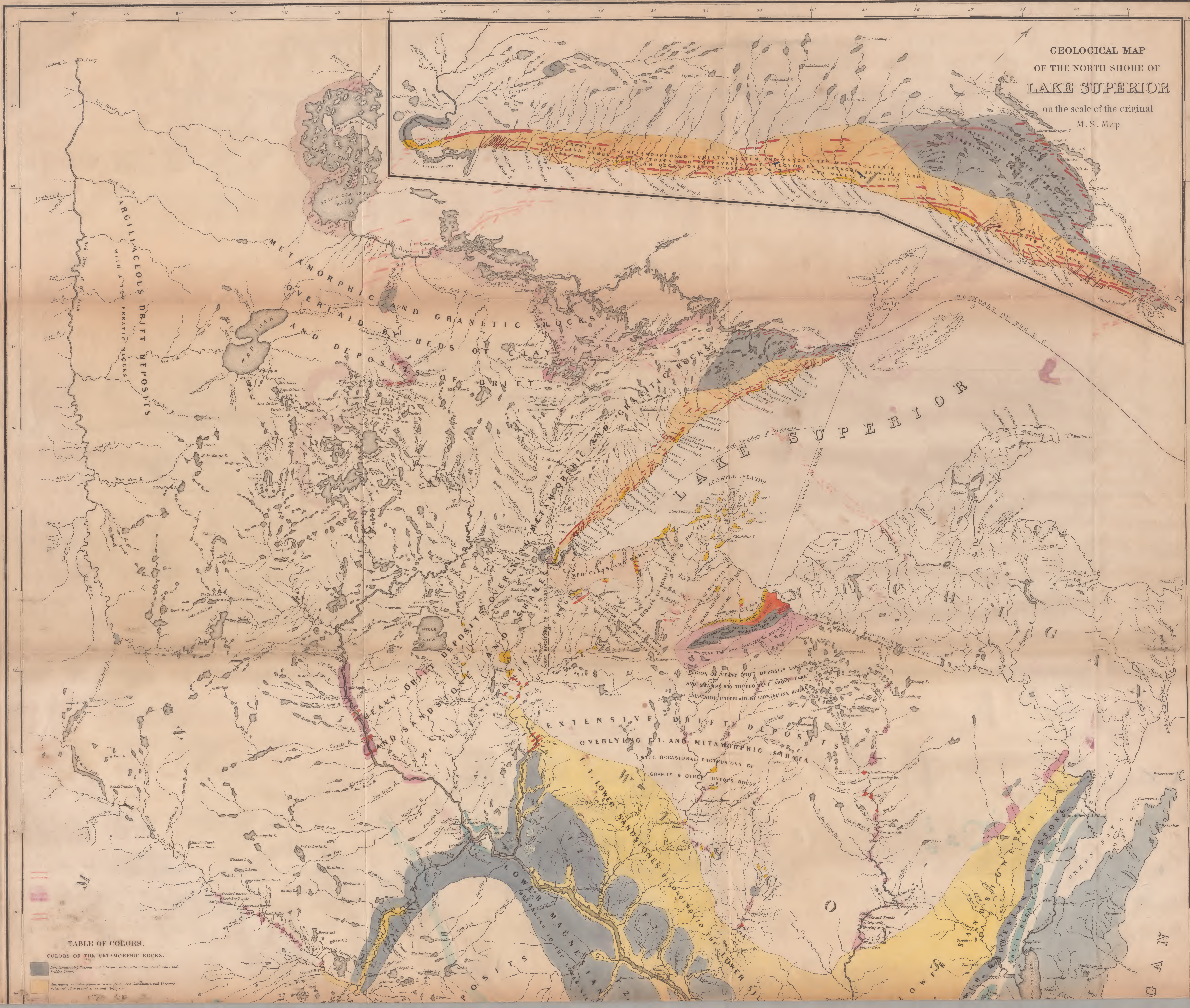
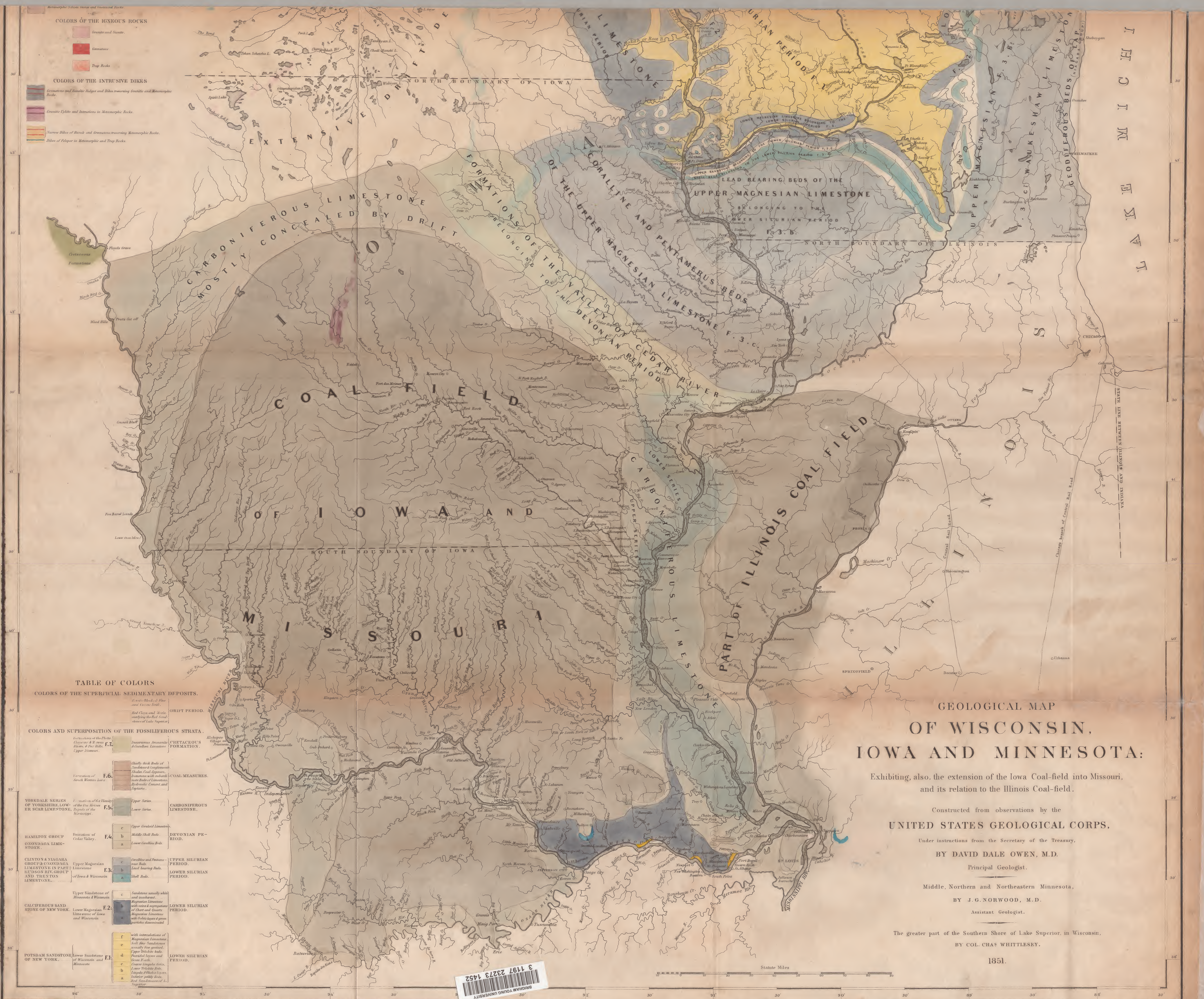

GEOLOGICAL MAP
OF THE NORTH SHORE OF
LAKE SUPERIOR
on the scale of the original
M.S. Map
ALTERNATIONS OF METAMORPHOSED SCHISTS, SLATES AND SANDSTONES WITH VOLCANIC GRITS AND OTHER BEDDED TRAPS AND PORPHYRIES INTERSECTED BY NUMEROUS BASALTIC AND GREENSTONE DIKES WITH OCCASIONAL DEPOSITS OF RED CLAY AND MARLS AND DRIFT
HORNBLENDIC AND ARGILLACEOUS SLATES WITH BEDDED PORPHYRIES AND INTRUSIONS OF GREENSTONE AND GRANITE
ARGILLACEOUS AND SILICIOUS SCHISTS WITH BEDDED TRAPS AND PORPHYRIES
St. Louis River
Fond du Lac
Thunder Bay
Pie I.
Grand Portage Bay
Pigeon Riv.
Isle Royale
BOUNDARY OF THE U.S.
Fort William
Ft. Garry
Ft. Francis
Lake of the Woods
Grand Traverse Bay
Rainy Lake River
Red Lake
Red River of the North
Pembina R.
ARGILLACEOUS DRIFT DEPOSITS WITH A FEW ERRATIC BLOCKS
METAMORPHIC AND GRANITIC ROCKS OVERLAID BY BEDS OF CLAY AND DEPOSITS OF DRIFT
METAMORPHIC AND GRANITIC ROCKS
LAKE SUPERIOR
APOSTLE ISLANDS
West boundary of Wisconsin
West boundary of Michigan
RED CLAYS AND MARLS
RIDGES OF DRIFT 300 TO 600 FEET
SUMMIT LEVELS, 600 TO 700 FT. ABOVE LAKE SUPERIOR. HEAVY DRIFT DEPOSITS RESTING ON IGNEOUS ROCKS
HIGH PLAINS OF RED CLAYS AND MARLS RESTING ON RED SANDSTONE
CHEGWOMIGON BAY
CONGLOMERATE RED SANDSTONE AND SLATES
TRAP RANGE
GREEN STONE
METAMORPHIC SLATES WITH BEDS OF MAGNETIC IRON ORE
GRANITIC AND QUARTZOSE ROCKS
REGION OF HEAVY DRIFT DEPOSITS LAKES AND SWAMPS 800 TO 1000 FEET ABOVE LAKE SUPERIOR UNDERLAID BY CRYSTALLINE ROCKS
MICHIGAN BOUNDARY LINE
SILURIAN PERIOD
SHALES AND SANDSTONES OVERLYING METAMORPHIC
HEAVY DRIFT DEPOSITS AND SANDSTONE
LOWER SANDSTONE
EXTENSIVE DRIFT DEPOSITS OVERLYING F. 1. AND METAMORPHIC STRATA WITH OCCASIONAL PROTRUSIONS OF GRANITE & OTHER IGNEOUS ROCKS
F. 1. LOWER SANDSTONES BELONGING TO THE LOWER SILURIAN
LOWER MAGNESIAN LIMESTONE BELONGING TO THE LOWER SILURIAN
F. 2.
DEPOSITS
LOWER SANDSTONE F. 1.
LOWER MAGNESIAN LIMESTONE F. 2.
SHELL BEDS
GREEN BAY
MINNESOTA
WISCONSIN
MICHIGAN
Mille Lacs
Ft. Snelling
St. Paul
St. Anthony
Crooked Rapids
Rock Bar Rapids
Pattersons Rapids
Vertical Outlier
Pejuta Zizi Rt.
Red Wood Rt.
Sleepy Eye Lake
Shell Lake
La Pointe
Madeline I.
Montreal R.
TABLE OF COLORS.
COLORS OF THE METAMORPHIC ROCKS.
Hornblendic, Argillaceous and Silicious Slates; alternating occasionally with bedded Traps.
Alternations of Metamorphosed Schists, Slates and Sandstones, with Volcanic Grits, and other bedded Traps and Porphyries.
30′
44°


EXTENSIVE DRIFT DEPOSITS
CARBONIFEROUS LIMESTONE MOSTLY CONCEALED BY DRIFT
FORMATIONS OF THE VALLEY OF CEDAR RIVER BELONGING TO THE DEVONIAN PERIOD
CORALLINE AND PENTAMERUS BEDS OF THE UPPER MAGNESIAN LIMESTONE F.3.C.
LEAD BEARING BEDS OF THE UPPER MAGNESIAN LIMESTONE BELONGING TO THE LOWER SILURIAN PERIOD F.3.b.
NORTH BOUNDARY OF IOWA
NORTH BOUNDARY OF ILLINOIS
SOUTH BOUNDARY OF IOWA
COAL FIELD OF IOWA AND MISSOURI
IOWA
MISSOURI
ILLINOIS
PART OF ILLINOIS COAL FIELD
CARBONIFEROUS LIMESTONE
LOWER SERIES
UPPER SERIES
UPPER MAGNESIAN LIMESTONE F.3.C.
WAUKESHAW LIMESTONE
GEODIFEROUS BEDS OF TRAP
LAKE MICHIGAN
Cretaceous Formations
STATE LINE BETWEEN ILLINOIS AND INDIANA
MILWAUKEE
CHICAGO
SPRINGFIELD
ST. LOUIS
MISSOURI RIVER
MISSISSIPPI RIV.
Statute Miles

Metamorphic Schists, Gneiss and Gneissoid Rocks.

COLORS OF THE IGNEOUS ROCKS

- Granite and Sienite.
- Greenstone.
- Trap Rocks.

COLORS OF THE INTRUSIVE DIKES

- Greenstone and Basaltic Ridges and Dikes, traversing Granitic and Metamorphic Rocks.
- Granitic Uplifts and Intrusions in Metamorphic Rocks.
- Narrow Dikes of Basalt and Greenstone, traversing Metamorphic Rocks.
- Dikes of Felspar in Metamorphic and Trap Rocks.

TABLE OF COLORS

COLORS OF THE SUPERFICIAL SEDIMENTARY DEPOSITS.

Erratic Block; & Fine and Coarse Drift. Red Clays, and Marls, overlying the Red Sandstones of Lake Superior.	DRIFT PERIOD.

COLORS AND SUPERPOSITION OF THE FOSSILIFEROUS STRATA.

	Formation of the Platte, Cheyenne, & Moreau Rivers; & Fox Hills, Upper Missouri.	F.7.		Inoceramus Ammonite & Cucullæa Limestone	CRETACEOUS FORMATION.
	Formation of South Western Iowa.	F.6.		Chiefly thick Beds of Sandstone & Conglomerate. Shales, Coal, Gypsum, Ironstone, with subordinate Beds of Limestone, Hydraulic Cement, and Septaria.	COAL MEASURES.
YOREDALE SERIES OF YORKSHIRE. LOWER SCAR LIMESTONE.	Formation of the Vicinity of the Des Moines Rapids of the Mississippi.	F.5.		Upper Series. Lower Series.	CARBONIFEROUS LIMESTONE.
HAMILTON GROUP	Formation of Cedar Valley.	F.4.	c	Upper Coraloid Limestone.	DEVONIAN PERIOD.
			b	Middle Shell Beds.	
ONONDAGA LIMESTONE.			a	Lower Coralline Beds.	
CLINTON & NIAGARA GROUP (& ONONDAGA LIMESTONE IN PART?)	Upper Magnesian Limestone	F.3.	c	Coralline and Pentamerous Beds.	UPPER SILURIAN PERIOD.
HUDSON RIV. GROUP AND TRENTON LIMESTONE.	of Iowa & Wisconsin		b	Lead bearing Beds.	LOWER SILURIAN PERIOD.
			a	Shell Beds.	
CALCIFEROUS SAND STONE OF NEW YORK.	Upper Sandstone of Minnesota & Wisconsin	F.2.	c	Sandstone usually white and incoherent.	LOWER SILURIAN PERIOD.
	Lower Magnesian Limestone of Iowa and Wisconsin		b	Magnesian Limestone with veins & segregations of Chert and Quartz	
			a	Magnesian Limestone with Oolitic layers & green particles disseminated	
POTSDAM SANDSTONE OF NEW YORK.	Lower Sandstone of Wisconsin and Minnesota	F.1.	f	with intercalations of Magnesian Limestone.	LOWER SILURIAN PERIOD.
			e	Soft fine Sandstones usually fine grained.	
			d	Upper Trilobite beds, Fucoidal layers and Green Earth.	
			c	Coarse Lingula Grits.	
			b	Lower Trilobite Beds, Lingula & Obolus layers.	
			a	Inferior pebbly Beds. Red Sandstones of L. Superior.	

GEOLOGICAL MAP
OF WISCONSIN,
IOWA AND MINNESOTA:

Exhibiting, also, the extension of the Iowa Coal-field into Missouri,
and its relation to the Illinois Coal-field.

Constructed from observations by the
UNITED STATES GEOLOGICAL CORPS,
Under instructions from the Secretary of the Treasury,
BY DAVID DALE OWEN, M.D.
Principal Geologist.

Middle, Northern and Northeastern Minnesota,
BY J.G. NORWOOD, M.D.
Assistant Geologist.

The greater part of the Southern Shore of Lake Superior, in Wisconsin,
BY COL. CHAS. WHITTLESEY.

1851.

Engraved by W. Smith Wash.ⁿ

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BRIGHAM YOUNG UNIVERSITY